Paroxysmal Tachycardia in Early Infancy

Treatment with Large Doses of Quinidine

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THERE are reports in the literature of more than 150 cases of paroxysmal tachycardia in the pediatric age group, and the incidence is probably much greater than this figure would indicate. Etiologic factors, symptoms and prognosis are so much different in young infants than in older persons that the condition has been considered as a separate entity. Nadas and co-workers[4] indicated that this "entity" should more accurately be limited to infants four months of age or younger. In observation of 25 cases in infants of this age group they noted that in the majority of cases no etiologic factor was determined, a high proportion of the patients were boys, symptoms of congestive heart failure were usually present, and there was a low incidence of recurrence beyond one year after the initial episode.

In an earlier communication, Hubbard[2] said that the patients although desperately ill usually respond promptly to digitalis and sometimes recover even without treatment. Since that time, however, it has been recognized that in an occasional case drugs other than digitalis are needed.

REPORT OF A CASE

A boy, born normally at term after uneventful pregnancy, progressed favorably until, on the 14th day, he refused feedings, vomited and became febrile. The following day tachypnea, cyanosis and listlessness were noted. The symptoms increased in severity and the child was hospitalized.

On examination the infant was observed to be severely dyspneic, pale and listless and he appeared to be critically ill. The pulse rate was 200 per minute. No murmurs were audible. Moist rales were present at the bases of the lungs. The liver was palpable four finger-breadths below the costal margin. Considerable enlargement of the heart was noted in an x-ray film. An electrocardiogram showed supraventricular paroxysmal tachycardia with a rate of 220.

The infant was placed in an oxygen tent and 0.1 mg. of digitoxin was administered intramuscularly. This was repeated every six hours for three doses. After 14 hours there was no improvement. Quinidine was then given orally in doses of 15 mg. repeated every eight hours. After the second dose of quinidine, the paroxysm was broken. The child was discharged, remained well for two weeks, then had another paroxysm which was followed by numerous recurrences. Many subsided spontaneously but sometimes as much as 200 mg. of quinidine in a single intramuscular dose was necessary to break the paroxysm. The patient had, in all, 61 paroxysmal episodes. It was finally discovered that a maintenance dose of 64 mg. of quinidine orally every four hours was necessary to prevent paroxysms. The dosage was gradually reduced and the medication finally discontinued when the child was 14 months old. He was examined a month later and his general condition was excellent. The weight was 27 pounds, 4 ounces, and the height 32¼ inches. No cardiac abnormalities were noted upon auscultation, fluoroscopic examination or electrocardiographic tracing. There had been no paroxysms for ten months.

DISCUSSION

Although in general the prognosis for infants under four months of age who have paroxysmal tachycardia is excellent, it should be borne in mind that any of the individual attacks may result in death if not recognized and treated.

Non-specific therapy includes the use of oxygen and morphine sulfate. The latter, in doses of 1 mg. per 4.5 kg. of body weight, has a pronounced effect on restlessness and irritability. Specifically, many drugs have been employed in an effort to terminate the paroxysm. Of these, digitalis is the most effective. The optimal digitalizing dose for children under two years of age is .06 mg. of digitoxin per kg. of body weight, administered in three divided doses within 16 to 24 hours. A daily maintenance dose of one-tenth the digitalizing dose for one week or more is recommended for prevention of recurrences. In the case herein reported, more than the optimal digitalizing dose was employed without effect.

Quinidine is effective for both therapy and prophylaxis of supraventricular tachycardia.[3] The condition will not recur if a level of 1 mg. of quinidine per liter of blood is maintained. Nadas and co-workers[4] said that quinidine is the drug of choice in the treatment of ventricular tachycardia. They recommended a dosage schedule of 100 mg. every three hours by mouth for five doses or until paroxysm stops. They used the drug only for older children. In the past, quinidine has been employed infrequently and then only with great caution. Its ineffectiveness in some cases undoubtedly is attributable in part to insufficient dosage.[1] It is unfortunate that the toxic effects of so valuable a drug have been overemphasized. Katz[3] stated that the only contraindication to the use of quinidine is idiosyncratic reaction to the drug. It may be given orally or intramuscularly in the same dosage. Intravenous administration is dangerous and rarely necessary. The dosage should be determined by clinical trial. In the case herein reported, as much as 200 mg. was administered in a single dose after lesser amounts had been found ineffective. The patient was maintained on the drug constantly for 12 months.

It is suggested that quinidine be administered in paroxysmal tachycardia in infancy whenever optimal doses of digitalis are ineffective. When quinidine is employed, the dosage should be increased to the point of therapeutic response provided no toxic effects result. This optimal dosage will vary with patients.

SUMMARY

1. A case of supraventricular paroxysmal tachycardia with 61 recurrences in a young infant is presented. Treatment with optimal doses of digitalis was ineffective and ultimately the patient was maintained without paroxysm for more than 12 months before the condition finally abated.

2. The treatment of this condition with emphasis on the use of quinidine is discussed.

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